

REMARKS

The foregoing amendment amends claims 1, 58, 90, 99, 100 and 120, cancels claims 2, 59, 98, 123 and 151-196 and adds new claims 197-222. Pending in the application are claims 1, 3, 4-58, 60-97, 99-122, 124-150 and 197-222, of which claims 1, 29, 58, 90, 120, 197, 199, 201, 204, 220, and 222 are independent. The following comments address all stated grounds for rejection and place the presently pending claims, as identified above, in condition for allowance.

Claim 1 is amended to include the patentable subject matter of claim 2.

Claim 58 is amended to include the patentable subject matter of claim 59.

Claim 90 is amended to include the patentable subject matter of claim 98. Consequential changes are made to claims 99 and 100 to depend from amended claim 90, rather than claim 98, which is now canceled.

Claim 120 is amended to include the patentable subject matter of claim 123, and to further specify that the diameter of the microchannel is between about 25 μm and about 100 μm , as recited in independent claim 1.

New claims 197-222 have been added to more fully capture the present invention. Support for the additional claims can be found throughout the application as filed, at least, for example in original claims 3-9, 13-14, 24-25, 27-28, and 152-165. *No new matter is added.*

Amendment and/or cancellation of the claims is not to be construed as an acquiescence to any of the objections/rejections set forth in the instant Office Action, and was done solely to expedite prosecution of the application. Applicant reserves the right to pursue the claims as originally filed, or similar claims, in this or one or more subsequent patent applications.

Claim Rejections Under 35 USC § 102

Applicants thank the Examiner for the close review of the claims and for indicating that claims 29-57 are allowed and that claims 2-9, 13, 14, 20-23, 25-28, 59-70, 74, 75, 81-84, 86-89, 91-100, 104, 105, 111-114, 116-119, 123-130, 134, 135 and 140-148 recite patentable subject matter. Claims 1, 10-12, 15-19, 24, 58, 71-73, 76-80, 85, 90, 101-103, 106-110, 115, 120-122,

131-133, 136-139, 144, 149 and 150 are rejected under 35 U.S.C. 102(e) as being anticipated by Chow (U.S. Pat. No. 6,494,230 B2). The amendment to independent claims 1, 58, 90 and 120 to incorporate subject matter indicated as allowable by the Examiner traverses the rejection and places pending claims 1, 3, 4-58, 60-97, 99-122, 124-150 and 197-222 in condition for allowance.

As recognized by the Examiner, the cited references do not teach or suggest a microfluidic device comprising a microchannel having an interior bounded by a side wall and a fluid interface port having a diameter that is substantially equal to the diameter of the microchannel such that when a fluid is disposed in the interior of the microchannel, the fluid forms a virtual wall at the fluid interface port, as recited in amended independent claims 1 and 120. Because claims 3-26 depend from claim 1 and claims 121-122 and 124-150 depend from claim 120, these claims are patentable for the same reason.

As recognized by the Examiner, the cited references also do not teach or suggest a microfluidic device comprising a microchannel having an interior bounded by a side wall and a fluid interface port having a dead volume of less than one picoliter so that a fluid in the microchannel forms a virtual wall in the fluid interface port, as recited in amended independent claim 58. Claims 60-89 depend from claim 58 and are patentable for the same reason.

As further recognized by the Examiner, the cited references also do not teach or suggest a microfluidic device comprising a microchannel, a fluid interface port formed in the side wall of the microchannel and a covering layer disposed over the fluid interface port for covering the fluid interface port, as recited in amended independent claim 90. Claims 91-97 and 99-119 depend from claim 90 and are patentable for the same reason.

New Claims

New claims 197-222 correspond to certain of the dependent claims indicated as reciting allowable subject matter by the Examiner, which has been re-written in independent form. Therefore, claims 197-222 are condition for immediate allowance.

Independent claim 197 corresponds to original dependent claim 3, which the Examiner considers to recite patentable subject matter. As recognized by the Examiner, the cited references fail to teach or properly suggest a fluid interface port in a microfluidic device having an inner wall comprising a material that is repellent to the fluid disposed in the interior of the microchannel. Therefore, claim 197 and claim 198, which depends from claim 197, are patentable over the cited references and introduce no new matter.

Independent claim 199 corresponds to original dependent claim 5, which the Examiner considers to recite patentable subject matter. As recognized by the Examiner, the cited references fail to teach or properly suggest a microfluidic device including a microchannel having an interior surface of the side wall of the microchannel is attractive to the fluid disposed in the interior of the microchannel and a fluid interface port formed in a side wall of the microchannel. Therefore, claim 199 and claim 200, which depends from claim 199 are patentable over the cited references and introduce no new matter.

Independent claim 201 corresponds to original dependent claim 7, which the Examiner considers to recite patentable subject matter. As recognized by the Examiner, the cited references fail to teach or properly suggest a microfluidic device comprising a microchannel, a fluid interface port formed in the side wall of the microchannel and a covering layer disposed over the fluid interface port for covering the fluid interface port, as recited in claim 201. Therefore, claim 201 and claims 202-203, which depend from claim 201, are patentable over the cited references and introduce no new matter.

Independent claim 204 corresponds to original dependent claims 13 and 14, which the Examiner considers to recite patentable subject matter. As recognized by the Examiner, the cited references fail to teach or suggest a microfluidic device including a microchannel, a fluid interface port formed in the microchannel and a droplet generating system comprising a droplet carrying element for forming and carrying a droplet of the fluid and for introducing the droplet to the channel through the fluid interface port. New dependent claims 206-218, which depend from claim 204, correspond to the subject matter of withdrawn and canceled claims 152-164. Claim 219 depends from claim 204 and recites the subject matter of canceled claim 165. These dependent claims are patentable for the same reasons as claim 204.

Independent claim 220 corresponds to original dependent claim 27, which the Examiner considers to recite patentable subject matter. As recognized by the Examiner, the cited references fail to teach or suggest a microfluidic device including a microchannel, a fluid interface port formed in the microchannel and an ejector coupled to the microchannel for ejecting a droplet of a fluid disposed in the microchannel through the virtual wall in the interface port. Therefore, claim 220 and claim 221, which depends from claim 220, are patentable over the cited references and introduce no new matter.

Independent claim 222 corresponds to original dependent claims 24 and 25, which the Examiner considers to recite patentable subject matter. As recognized by the Examiner, the cited references fail to teach or suggest a microfluidic device including a microchannel comprising a semi-open channel structure formed in a substrate, and further comprising a cover for covering the semi-open channel structure to form an enclosed microchannel, the enclosed microchannel forming an interior bounded by a side wall, the side wall being formed by the substrate and the cover, and a fluid interface port formed in the side wall. Therefore, claim 222 is patentable over the cited references and introduces no new matter.

For at least these reasons, pending claims , 3, 4-58, 60-97, 99-122, 124-150 and 197-222 distinguish patentably over the prior art. As such, Applicants respectfully request that the rejections of the claims and 35 U.S.C. 102 be reconsidered and withdrawn.


CONCLUSION

In view of the above amendment, applicants believe the pending application is in condition for allowance.

Applicants believe no fee is due with this statement. However, if a fee is due, please charge our Deposit Account No. 12-0080, under Order No. TGZ-001A from which the undersigned is authorized to draw.

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Respectfully submitted,

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